

This listing of claims will replace all prior versions, and listings, of claims in the application:

The Status of the Claims

1. (Currently Amended) ~~1-~~A method of manufacturing a semiconductor device comprising:
 - forming a contact hole in an insulating layer;
 - filling the contact hole with a copper layer;
 - planarizing the copper layer;
 - removing a copper oxide layer parasitically formed on the copper layer, wherein removing the copper oxide layer comprises performing a plasma process using nitrogen gas, and wherein removing the copper oxide layer exposes a surface of the copper layer;
 - forming a copper nitride layer having a thickness of about 50 to 200 Å
on the surface of the copper layer;
 - depositing a copper barrier layer on the insulating layer and the copper nitride layer, the copper barrier layer being a nitride layer having a thickness of about 50 to 200 Å;
 - depositing an upper insulating layer on the copper barrier layer; and
 - forming an upper contact hole in the copper barrier layer and the upper insulating layer to expose the copper nitride layer.
2. (Currently Cancelled)

3. (Currently Cancelled)
4. (Currently Amended) A method as defined in claim ~~[[3]]~~ 1, wherein the ~~at least one of ammonia gas and nitrogen gas~~ is introduced into a reaction chamber at a flow rate of approximately 100 sccm to 200 sccm.
5. (Original) A method as defined in claim 4, wherein a temperature of the reaction chamber is maintained at approximately 300 to 500°C.
6. (Currently Amended) A method as defined in claim ~~[[3]]~~ 1, wherein removing the copper oxide layer and depositing the copper barrier layer are conducted in the same reaction chamber.
7. (Currently Amended) A method as defined in claim ~~[[2]]~~ 1, wherein removing the copper oxide layer comprises performing a heat treatment in an atmosphere of ~~ammonia gas or~~ nitrogen gas.
8. (Currently Amended) A method as defined in claim 7, wherein the atmosphere of ~~ammonia gas or~~ nitrogen gas is introduced into a furnace at a flow rate of approximately 5 to 20 slm.
9. (Original) A method as defined in claim 8, wherein a temperature of the furnace is maintained at approximately 400 to 600°C.

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10. (Currently Cancelled)

11. (Currently Cancelled)

12. (Currently Cancelled)